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Systemic risk, corporate governance and regulation of banks across emerging countries

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HIGHLIGHTS

- We analyze impact of governance and regulation on systemic risk.
- Corporate governance have no significant impact on banks' individual risk.
- External governance affects the impact of corporate governance on systemic risk.

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ABSTRACT

This paper investigates the impact of governance and regulation on systemic risk banks from 10 CEE countries. Our results show that tight internal risk management mechanisms and shareholder-friendly supervisory boards are associated with higher contribution of banks to systemic risk. Additionally, external governance significantly affects the impact of corporate governance on systemic risk.

1. Introduction

The run-up to the global financial crisis was marked by excessive risk taking in the financial sector, and once the crisis hit, the accumulated risks led to systemic problems as well as the collapse of many individual financial institutions (IMF, 2014). The failure of various governance mechanisms has often been cited among the key causes of the crisis.[1] To tackle the issue of excessive risk taking, the post crisis financial reform agenda has placed great emphasis on reforming governance in order to control bank risk-taking.[2] Also, the financial crisis has led to a re-examination of risk assessment practices and regulation of the banking system, with a focus not on the idiosyncratic risk of banks, but on their individual contribution to the risk of the banking system as a whole (Anginer et al., 2014). Despite the amplified interest toward the measurement of systemic risk over the past few years, surprisingly little is known so far about the governance specific attributes that may influence the level of systemic risk (Iqbal et al., 2015). Regulation could be considered as a complementary, external governance force, which may be particularly relevant for banks with weak internal governance. Previous studies suggest that bank risk-taking responds to changes in domestic regulation and

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[1] For a comprehensive survey of the relevant literature see e.g. De Haan and Vlahu (2015) and Srivastav and Hagendorff (2015).

[2] See e.g. Basel Committee (2010) and IMF (2014).

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supervision (Buch and DeLong, 2008). When regulatory constraints are removed, the outcome may critically depend on the interaction between corporate governance and firm behavior, particularly if behavior is not primarily driven by value maximization and if the regulatory constraints have been designed to inhibit risk-taking (Illueca et al., 2014).

2. Data and methodology

The dataset contains data for 27 banks operating in 10 CEE countries from 2005Q1 to 2012Q4.[3] While financial accounting data are taken from the Bankscope database, market data are retrieved from Thomson Reuters Datastream. We started with an initial sample of 92 listed banks from Bankscope, keeping just those large enough to destabilize the banking system at the country level (total assets higher that 300 million EUR) and whose stock prices data is available from Thomson Reuters Datastream. Also, we hand-collect annual information on corporate governance from the banks' annual reports, financial statements and websites. Complete data is available for 27 banks, of which 10 are domestic banks and 17 are foreign banks. These financial institutions are important from a regulatory perspective as 14 of them are included in the Single Supervisory Mechanism by ECB (2015) and 11 have their bank holding companies considered SIIs by EBA (2014) or G-SIBs by FSB and BCBS (2014).

In a first stage we estimate each bank's individual risk-taking and systemic contribution on a weekly basis following the Conditional Value at Risk methodology developed in Adrian and Brunnermeier (forthcoming). First, we estimate *Individual Risk (IR)*, defined as the maximum possible loss of each bank's market value assets at a given confidence level (99%) (i.e., the Value at Risk measure, VaR).[4] Second, we estimate the risk of the system, defined as the maximum possible loss of the system's market value assets at a given confidence level (99%), conditional on each bank's *IR* (i.e., the Conditional Value at Risk measure, CoVaR).

VaR and CoVaR measures are obtained by running the Quantile Regression (QR) technique of Koenker and Bassett (1978) on a model that represents the dependence of banks' loss (and respectively system's loss) on a set of market indices that captures the exposure of banks to common factors.[5] Finally, the *Contribution to Systemic Risk (CSR)* of each bank (expressed in weekly percentage loss of the system's market value of total assets) is determined as the difference between the highest and the median possible loss of the system, conditional on each bank's loss.[6] The robustness of the estimations is validated by several backtesting procedures (i.e., likelihood ratio tests of unconditional coverage, conditional coverage and independence).

In a second stage, we assess the impact of governance and regulatory framework on banks' *Contribution to Systemic Risk (CSR)* and *Individual Risk (IR)*. To assess the impact of governance, we start with the following regression estimated via Pooled OLS with bank level clustered standard errors:

$$Risk_{ij,t} = \beta_0 + \beta_1 \times Gov_{ij,t-1} + \beta_2 \times Gov_{ij,t-1} \times Crisis_{t-1} + \Theta \times BC_{ij,t-1} + \upsilon_t + \varepsilon_{ij,t}. \quad (1)$$

The dependent variable, $Risk_{ij,t}$ is represented alternatively by bank i's from country j contribution to systemic risk in quarter t ($CSR_{ij,t}$) and bank i's from country j individual risk in quarter t ($IR_{ij,t}$) previously estimated. The main regressors of interest are the banks' governance policies ($Gov_{i,t-1}$), which reflect their risk-taking and supervision strategies: *Risk management index*, *Supervisory board index* and *Corporate governance index*. Similar to Andrieş and Brown (2014), in order to assess the risk management mechanisms we create a composite *Risk management index* as an unweighted average index based on the following four indicators: *CRO Present*, *CRO Executive*, *Risk committee* and *Risk committee reports to board*. Our second index assesses the structure of corporate governance as measured by the size and structure of the supervisory board. Also, we calculate a *Supervisory board index* as an unweighted average index based on the following four indicators of board size and structure: *Board size*, *Board expertise*, *Board independence* and *Board foreign*. Following Ellul and Yerramilli (2013) we calculate *Corporate governance index* by taking the first principal component of the all eight supervisory board and risk management variables.

In order to assess the impact of the crisis on the relationship between governance and risk, in Table 1 Panel B we include the interaction term between governance variables and crisis.

To control for differences in size and business models across our sample, we employ the following bank-level control variables, $BC_{ij,t-1}$: (1) *Bank size*; (2) *Capital structure*; (3) *Liquidity ratio*; and (4) *Foreign ownership*. Specifications include year fixed effects (υ_t) to control for unobserved heterogeneity. $\varepsilon_{ij,t}$ is an *i.i.d.* error term specific to bank i from country j in quarter t. The explanatory variables are lagged by one quarter.

The impact of risk management and corporate governance on bank risk-taking may arguably differ across countries with different levels and quality of regulatory framework. Following Laeven and Levine (2009), we interact our indicators of corporate governance with proxies for the strength of the regulatory framework. The following regression is estimated via Pooled OLS with bank level clustered standard errors:

$$CSR_{ij,t} = \beta_0 + \beta_1 \times Gov_{ij,t-1} + \beta_2 \times Gov_{ij,t-1} \times Reg_{j,t-1} + \Phi \times Reg_{j,t-1} + \Theta \times BC_{ij,t-1} + \upsilon_t + \varepsilon_{ij,t}. \quad (2)$$

In addition to Eq. (1), we include alternatively the interaction between governance and the regulatory framework indices ($Reg_{j,t-1}$) – *Capital regulation index*, *Banking activity restrictions index* and *Supervisory power index* – that are constructed using the data from the survey of bank regulations conducted by the World Bank (Barth et al., 2008). The higher the score of the indices, the tighter are the regulatory policies. We define each country as a country with a lax regulation, if the value of alternative regulatory framework indices for that country is lower than the median value for entire sample of countries. Countries that do not fall under the previous definition are considered as having a tight regulation.

3. Results

3.1. Systemic risk, individual risk and governance

Table 1 presents the estimation results for the Pooled OLS regression presented in Eq. (1). Panel A shows the output for *Contribution to Systemic Risk* determinants and Panel B for the *Individual Risk* regressors. A positive coefficient is associated with a deteriorating risk situation, while a negative coefficient is related to an improved risk situation.

Similar to Iqbal et al. (2015), our empirical findings indicate that banks with stronger and more shareholder-friendly corporate governance mechanisms are associated with higher systemic

[3] The countries are Bulgaria, Croatia, Czech Republic, Hungary, Lithuania, Poland, Romania, Serbia, Slovakia, and Ukraine.

[4] The market value of assets is obtained from the book value of total assets adjusted by the ratio between banks' market capitalization (from Datastream) and the book value of equity (from Bankscope).

[5] The market variables are represented by EURO STOXX Financials Index, Euro Area Government bonds 10 years—1 month spread, Eonia change, Euribor Eoniaswap 3 month change, Foreign Exchange Market realized volatility (from ECB and Bundesbank).

[6] These correspond to the 1% quantile of the system's assets market value distribution (1% CoVaR), and, respectively to the 50% quantile of the assets market value distribution (50% CoVaR).